July 21, 1986

Mr. Mark A. Haney, Manager
Facilities Compliance Unit
Compliance Monitoring Section
Illinois Environmental Protection Agency
Division of Land Pollution Control
2200 Churchill Road
Springfield, IL 62706

Ref: My Letter of April 25, 1986
Hydrocarbon Contamination in Groundwater

Dear Mr. Haney:

Enclosed, please find a complete report of the findings in our investigation of the hydrocarbon contamination in the ground water within our property boundaries. Included in this report are the various steps we plan to take to eliminate this problem.

Please refer all correspondence to Dennis M. Ruetten, Supervisor/ Facility Schedule and Control, Allsteel Inc., Allsteel Drive, Aurora, IL 60507-0871.

If you have any questions, please call (312) 844-7159.

Sincerely,

Edward H. Shafer
Manager - Plant Engineering

ndm
Enc.

PRELIMINARY SITE INVESTIGATION

AND

PROPOSED SOLUTIONS

Allsteel Inc.
Allsteel Drive
Aurora, IL 60507

July 15, 1985

Prepared by: Dennis M. Ruetten, P.E.
Supervisor/Facility Schedule
and Control

TABLE OF CONTENTS

I. INTRODUCTION

During January, 1986, an employee at Allsteel noticed an unfamiliar odor in his private office, a space near the southeast corner of the main office building at this facility. The odor appeared to be coming through the concrete floor. Careful examination revealed that the solvent type smell was coming up between the floor slab and the building footing.

II. INVESTIGATION

The onset of the investigation involved several management employees who are very familiar with the solvents used at this facility. Determination of the specific solvent fume that appeared to be coming through the floor was attempted by comparison of odors of known solvents used in the processing departments of the factory. No match was attained.

An examination of all cleaning materials used in the office building was then made. Again, no match could be made.

Consideration was next given to the possibility that by some route, not yet determined, solvent could be in the sewer line under the floor in the vicinity of the private office containing the odor. It was anticipated that the sewer line could be broken and the solvent may be saturating the sub-floor material. National Power Rodding was contracted to do a video inspection of the sewer line with its camera and recording equipment. When the sewer was opened, there were no solvent fumes. The video inspection was made; the sewer line was intact.

The under-floor electrical and telephone wireways were inspected for solvent. Faint odors of solvent were detected but no source was evident. Odors appeared and disappeared in the entire area day by day.

Groundwater Technology Inc. was contacted for assistance in determining the chemical make-up of the fumes and locating possible sources. A 5' deep well was installed in the northwest corner of the private office. Air and soil samples were taken. The test results of samples are shown in Appendix A.

The test results indicated that harmful solvent vapors were evident occasionally in the private office. An immediate solution to improve air quality in that office was to install a horizontal screen underneath the floor slab to exhaust solvent fumes before they surfaced above grade. A Rotron pump with charcoal filters was connected to the horizontal screen to draw the fumes out from under the floor.

Samples of the sub-floor air were taken to determine initial concentrations. The test results of these samples are shown in Appendix B.

Samples of the air in the private office were also taken to assure that occupance was not harmful. Test results of these samples are shown in Appendix C.

A complete analysis of sewer locations, footing locations, underground storage tank locations and building locations where all solvents are stored and used was made. Assumptions were made regarding possible sources for these solvent fumes.

II. INVESTIGATION (Cont.)

Test Wells #1 and #2 were installed. Well #1 was installed near the underground solvent storage tanks, Well #2 near the office building at a location adjacent to the private office containing the fumes. Samples were taken from both wells for analysis. It was noted at this time, that there was approximately 2½ inches of free liquid on top of the groundwater at test Well #2.

The Illinois EPA was notified at this time that we had found hydrocarbon contamination of the groundwater.

A proposal was prepared by Groundwater Technology to investigate the problem further. Estimated costs for this project prompted Allsteel to further investigate groundwater problems and their solutions in a more hypothetical nature to become aware of all technology available.

Wang Engineering, 4300-P Lincoln Avenue, Rolling Meadows, IL 60008, was contacted for discussion of the problem, possible methods of investigation and solutions.

Ruddy Bros., Inc., Aurora, IL, was contracted to do drain-down tests of the major sewer lines in the factory building. No major leaks were found.

National Power Rodding again was contracted to do video inspections of the sewer lines, this time in the factory. Since the drain-down tests revealed no problems, it was not surprising to find no sewer tile breakage with the video equipment.

Four underground 1,500 solvent storage tanks have been emptied and cleaned. There were no indications that the tanks were leaking, but discontinued use eliminated them from being a future source.

Three 15,000 gallon underground fuel oil storage tanks were emptied and cleaned. There was no evidence of fuel oil in any of the samples taken, but elimination of the tanks removed them from a list of sources.

IIW Associates of Dubuque, Iowa, were contacted for information regarding groundwater contamination problems. They recommended RMT Inc. of Madison, Wisconsin.

RMT Inc. was contracted to perform a soil vapor analysis to locate a suspected plume of solvents east of the office building. The soil vapor analysis was done via vapor tubes driven approximately 2' into the ground. An HNU Photoionization Detector was used to measure VOC's in the tubes. A layout of the readings is shown in Appendix E.

RMT also consolidated all of the information we had attained to date to better define the problem and possible solutions.

Layne-Western, Aurora, IL, was contacted to acquire more information on the geology of the area and to better understand Hydrogeology.

II. INVESTIGATION (Cont.)

Groundwater Management, Inc., Kansas City, Kansas, a subsidiary of Layne-Western, was contacted for their expertise on hydrogeologic situations such as ours.

Maecorp Inc., Homewood, IL, was contacted to evaluate all of the information we accumulated and to provide a proposal to solve the problem.

III. FINDINGS

A plume of solvents approximately the size shown in Appendix D, has been located. The plume consists of the following:

1. Isopropyl Alcohol
2. Methylene Chloride
3. Methyl Ethyl Ketone
4. 1,1,1 - Trychlorethane
5. Toluene
6. Xylene

The plume is 2½" deep and is on top of the groundwater at a depth of approximately 16' below grade. The groundwater and solvents are contained in a layer of medium to coarse sands with gravel. Directly below this layer is a less permeable layer of gray gravelly clay. It is not believed that any solvent has gone beyond this layer.

The solvent plume is believed to be within the property lines of this facility at this time.

Although an approximate cross-sectional area of the plume can be calculated at this time, uniform depth of the plume is unlikely. An approximate volume of solvent, therefore, cannot be determined.

Readings taken of the air in the office building indicate no hydrocarbons are present. The Roton Discharge System is very effective in removal of the solvent fumes.

The sewer lines in the building appear to be in good condition. One section of the east factory sewer line appeared to have a very small leak in the drain-down test. The video inspection, however, revealed no problem in that area.

A possible source of solvents in the sewer line was not found. Samples of spraybooth water indicated no unusual amounts of solvent.

No incidences have occurred due to this groundwater problem. There has been no change in growth of the lawn or trees in the area of the plume.

IV. METHODS OF SOLUTION

The next phase of the project will be to determine the exact location of the plume. This will be done by installing additional monitoring wells in the area of the solvent plume. Exact location of these wells will be determined at the time of installation. Layne-Western will be contracted to do this portion of this phase.

IV. METHODS OF SOLUTION (Cont.)

The Toxic Organic Management Program will be reviewed with all employees involved to insure its effectiveness. The sewers within the facility will thus be eliminated as the final item on the possible list of sources.

The underground storage tanks will be taken out of service permanently in accordance with IEPA regulation via the State Fire Marshall's office.

The Roton Discharge System will be used continually until the contamination of the groundwater has been removed. Air samples of the office space relevant to this project will be taken and analyzed on a regular basis.

After specifics of the plume are obtained, Groundwater Management Inc. will be contracted to pump out the free liquid and begin air stripping the contaminated water.

Upon complete removal of the solvent plume, Groundwater Technology will be contracted to reduce contamination to an acceptable level via biodegradation, patented by Groundwater Technology as enhanced natural degradation.

V. TIMING

Additional monitoring wells, to accurately locate the plume, will be installed within 30 days. Pumping of the free liquid will begin as soon as the wells have been evaluated. The free liquid will be disposed of within the regulations of our current disposal permits.

After the free liquid has been removed, the extent of contamination will be re-evaluated before the next step of cleanup will be determined. Allsteel will furnish an updated report at that time.

APPENDIX A

Test results of air samples taken from Test Well O-1, February 22, 1986:

Compound	Measured Level
Isopropyl Alcohol	284 PPB
Methylene Chloride	2510 PPB
Methyl Ethyl Ketone	335 PPB
1,1.1 - Trichlorethane	510 PPB
Toluene	2480 PPB
Xylene	114 Nanograms

Samples obtained and tested by: Ground Water Technology Inc.
Novi, Michigan

APPENDIX B

GROUNDWATER TECHNOLOGY LABORATORY

ANALYTICAL & CONSULTING SERVICES
Division of Oil Recovery Systems, Inc.
4 Mill St., Greenville, NH 03048
Tel: (603) 878-2500

Report No. 40-2803-2
VOLATILE ORGANICS ANALYSIS IN AIR

Sample No.	A6687
ID	Rotron discharge
Date Sampled	3/11/86
Date Analyzed	3/13/86

PARAMETER	CONCENTRATION mg/cu.m. @ 20'C.	~~TLV~~	STD. DEVIATION OF REPLICATES
dichloromethane (methylene chloride)	210	500	+/- 62
1,1,1-trichloroethane	35		+/- 6.5
n-heptane	150		+/- 15
methylcyclohexane	92		+/- 10
toluene	200	200	+/- 5
total xylenes	52	100	+/- 22

ARRO Laboratories, Inc.

P.O. Box 686 Caton Farm Road
Joliet, Illinois 60434

Telephone 815 727-5436 312 454-0245
Telex 723421 UAR JOL

INTRODUCTION

All Steel in Aurora, Illinois requested that ArRo LABORATORIES, Inc. test for the presence of organic vapors in an office area within their facilities. A sampler from ArRo was installed on the premises and the air was monitored over a one hour period at various locations within the office area.

PROCEDURE

Samples were taken over a 15 minute sampling period at four different locations within the area in question. A measured volume of air was drawn through charcoal tubes. These tubes were returned to the laboratory, extracted with carbon disulfide, and analyzed by gas chromatography using a flame ionization detector.

Samples of the solvents used within the manufacturing facility were provided by All Steel. These materials were used to identify and quantitate the organic vapors found on the charcoal tube air monitors.

RESULTS

The results obtained from the air monitoring at All Steel were as follows:

Sample Description	ArRo No.	Low Flash Naphtha, ppm	IPA, ppm	Methylene Chloride, ppm	Toluene, ppm	Xylene, ppm
Sample No. 1 & 2	100669	4.0	0.81	27.4	24.30	0.05
Sample No. 3 & 4	100670			18.2	0.4	
Sample No. 5 & 6	100671			17.6		
Sample No. 7 & 8	100672	0.07	0.48	24.3	24.3	
Total Concentration in Area Tested		4.1	1.3	87.5	24.3	0.05

Figure No. 1 shows the location of the sampling sites for the office area. At least, 10 liters of air was sampled at each sampling point.

TITLE APPENDIX C PROJECT NO.

BOOK NO.

LCLT 8:25 AM BACK 11:50AM Miles 52

ALL-STEEL 298 A START 9:30

80 on flow meter STOP

= 1426 cc/min X 15' 21390 cc

21.39 L.

9. 9:50 AM 3.
9. 10:05 AM 4
DONE

10. 5 10:10 AM
10. 6 10:25 AM
DONE

DESK

(2) SAMPLE

SAMPLE (3)

DESK

10. 10:50 AM DONE
11. 11:05 AM
9. (5) SAMPLE
10.

TABLE

HOLE (0)

(1) SAMPLE

DOOR

SAMPLE (4)

7. 9:30 AM 7
8. 9:45 AM 8

9. 7 10:30
10. 8 10:45

DONE (7)

DONE

FIGURE NO. II

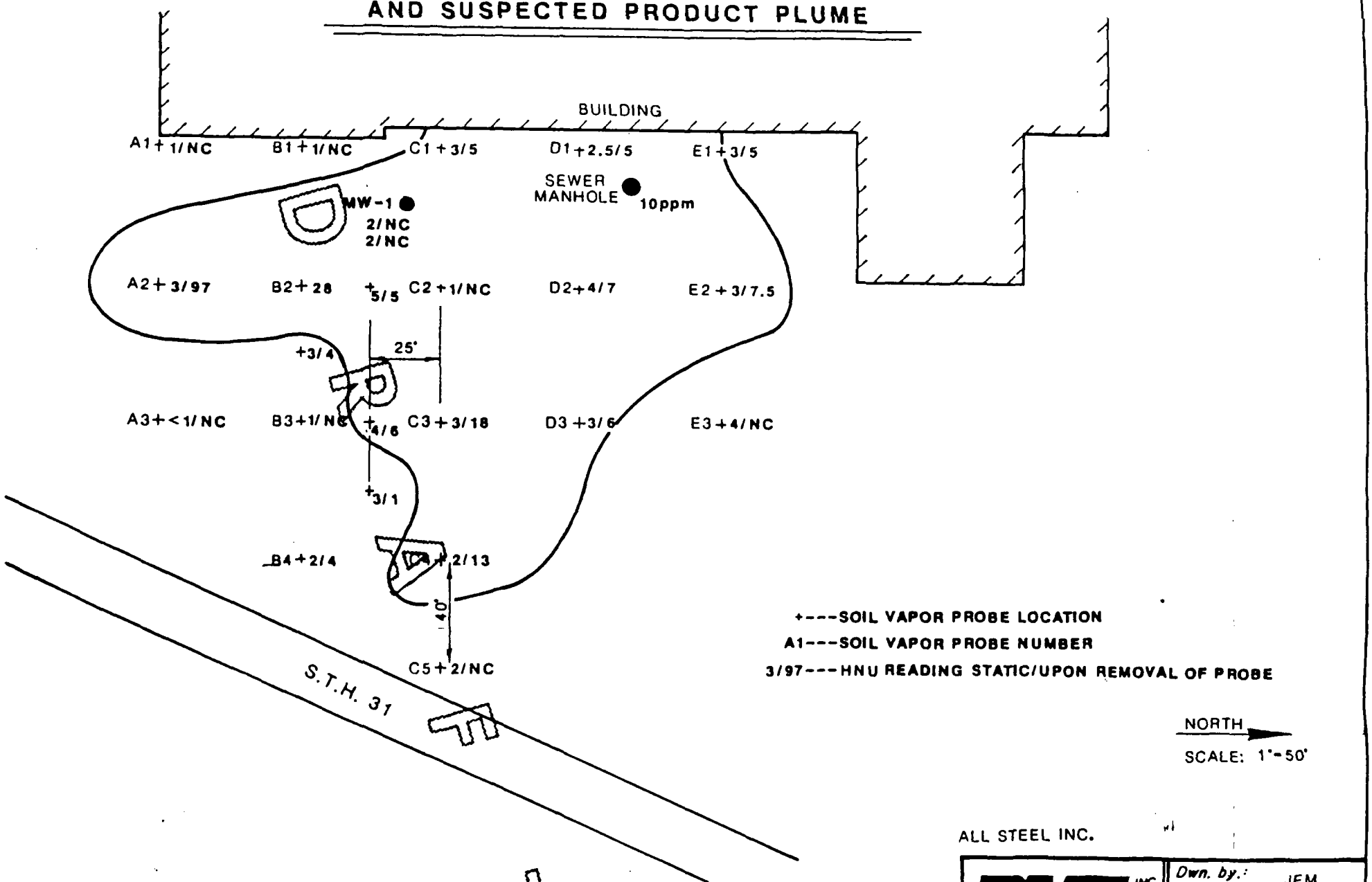
SCIENTIFIC BINDERY PRODUCTS CHICAGO

SIGNATURE Albert Tracy DATE 2-12-8

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE 2/7-

LAY-OUT of SAMPLING LOCATIONS
FOR ALL-STEEL - AURORA, ILLINOIS

LOCATION OF VAPOR ANALYSIS PROBES AND SUSPECTED PRODUCT PLUME



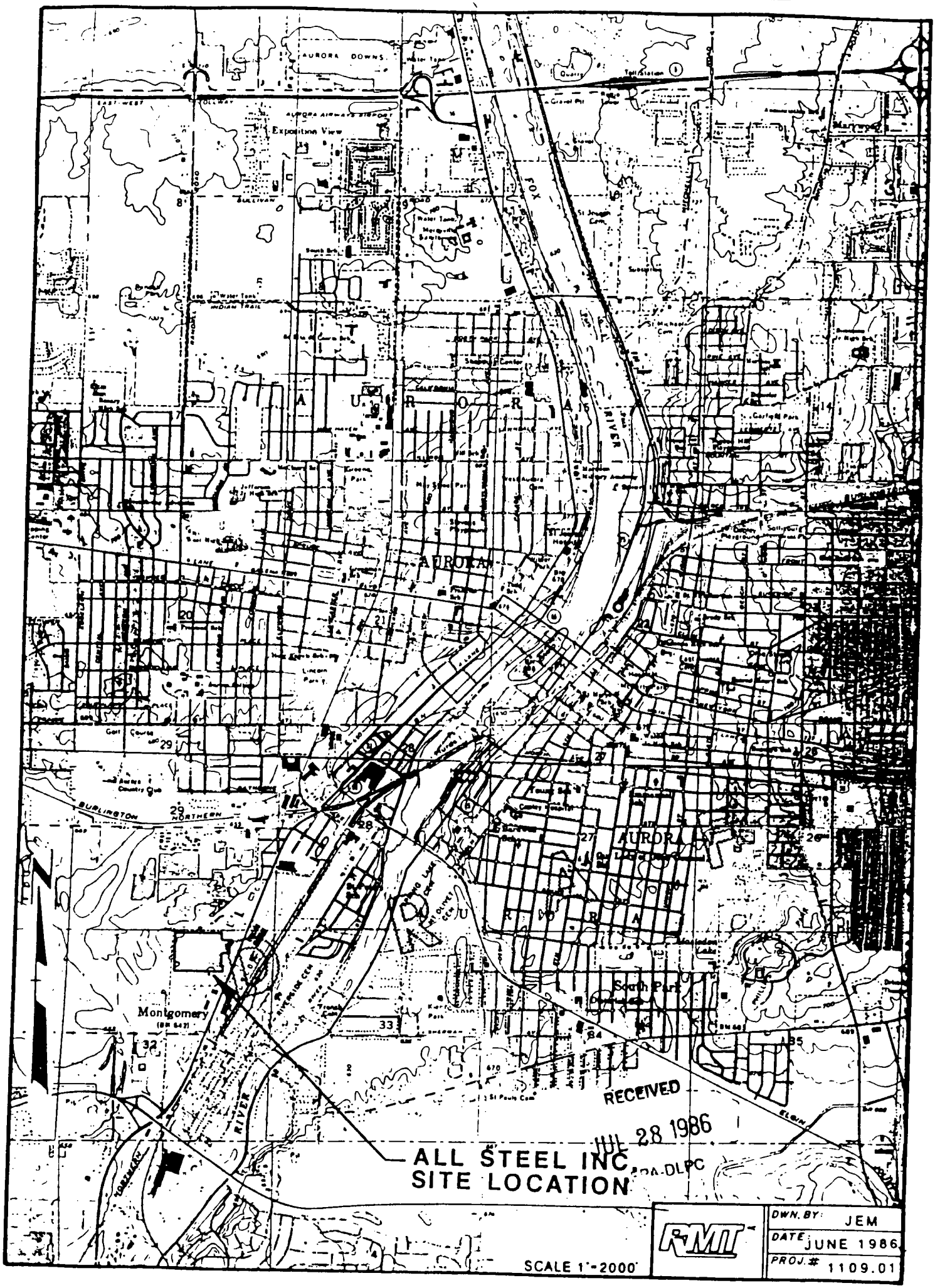
ALL STEEL INC.

RMT INC

Dwn. by.:	JEM
Date:	JUNE 1986
Proj. #:	1109.01

APPENDIX E

APPENDIX F


AURORA DOWNS
Exposition View
FOX RIVER
AURORA
AURORA
AURORA
BURLINGTON NORTHERN
Montgomery
South Park
RIVER
RECEIVED
JUL 28 1986
ALL STEEL INC.
SITE LOCATION
SCALE 1"=2000'
RMT
DWN. BY: JEM
DATE JUNE 1986
PROJ.# 1109.01